

PROGRAMMABLE | MULTI-FUNCTION

TR-6 SERIES TIME RANGER™



- ◆ Four or eight timing functions in one unit easily selectable with rotary switch
- ◆ Each unit has 16 timing ranges built-in covering 0.05 seconds-100 hours
- ◆ Selecting a range is easy using a 16-position rotary switch (no math is required or DIP switches to set)
- ◆ Universal input voltage: 24-240V AC & 12-125V DC
- ◆ Utilizes industry-standard 8 or 11 pin octal sockets
- ◆ 10A SPDT or DPDT output contacts can handle most pilot duty and fractional HP loads



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The TR-681 & TR-682 Series offer the flexible programmability of a multi-function and multi-range time delay relay together with a universal input voltage. These products provide an easy method to select one of eight (TR-681) or four (TR-682) time delay functions and any time range between 0.05 seconds and 100 hours. Programming is accomplished through the use of two rotary switches to select function and time range. The actual time delay is then set by using the potentiometer to adjust within the selected time range. This product can literally replace hundreds of different catalog numbers, thereby reducing inventory requirements.

FUNCTION ■	OUTPUT	INPUT VOLTAGE 50/60Hz.	CATALOG NUMBER	WIRING/ SOCKETS
ON DELAY INTERVAL ON OFF DELAY SINGLE SHOT FLASHER (ON 1st) SINGLE SHOT (Falling Edge) WATCHDOG ON DELAY (Triggered)	11 Pin DPDT	24-240V AC & 12-125V DC	TR-6812U	11 PIN OCTAL 70170-D DIAGRAM 210
	8 Pin SPDT	24-240V AC & 12-125V DC	TR-6816U	8 PIN OCTAL 70169-D DIAGRAM 211
ON DELAY INTERVAL ON FLASHER (OFF 1st) FLASHER (ON 1st)	8 Pin DPDT	24-240V AC & 12-125V DC	TR-6822U	8 PIN OCTAL 70169-D DIAGRAM 1

■ See "Definitions of Timing Functions".

TIMING RANGES

Select one of the 16 built-in time ranges by setting the rotary switch per a chart on the unit (see right) and then adjust within that range using the knob on top.

Dial Setting	Timing Range	Dial Setting	Timing Range
A	0.05 - 0.5 Sec.	I	1 - 10 Min.
B	0.1 - 1 Sec.	J	3 - 30 Min.
C	0.5 - 5 Sec.	K	6 - 60 Min.
D	1 - 10 Sec.	L	0.2 - 2 Hr.
E	3 - 30 Sec.	M	0.5 - 5 Hr.
F	6 - 60 Sec.	N	1 - 10 Hr.
G	0.2 - 2 Min.	O	2.4 - 24 Hr.
H	0.5 - 5 Min.	P	10 - 100 Hr.

Sockets & Accessories available

Build your Time Delay Relays with the Online Product

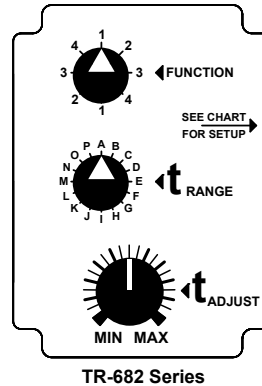
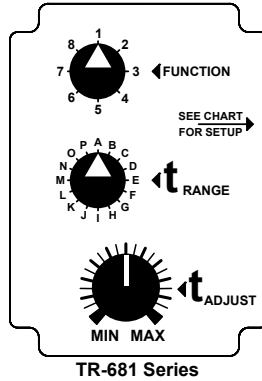
PROGRAMMABLE | MULTI-FUNCTION

TR-6 SERIES TIME RANGER™

PROGRAMMING FUNCTION & TIME DELAY

Setting Function: To set the function, first select one of the eight (TR-681 Series) or four (TR-682 Series) functions from the Select Function Chart located on the side of the relay (see right). Position the eight-position rotary switch to the number that corresponds to the desired function. **NOTE:** Because the TR-682 Series comes with only four functions, but uses an eight-position rotary switch to select a function, each function can be selected with the same number in two positions. **NOTE: Function cannot be changed with power applied to unit.**

Setting Time Delay and Time Range: To set the desired time delay, first select one of the 16 time ranges from the Timing Range Chart located on the side of the relay. Position the rotary switch to the letter that corresponds to the desired time range. Then adjust the time delay within the selected time range by rotating the large knob of the potentiometer located on top of the unit. **Note:** The tick marks are for reference only.



TR-681 Series

Select Function	
1	On Delay
2	Interval On
3	Flasher - On 1st
4	Triggered On Delay
5	Watchdog
6	Single Shot
7	Off Delay
8	One Shot Falling Edge

TR-682 Series

Select Function	
1	On Delay
2	Interval On
3	Flasher - Off 1st
4	Flasher - On 1st

APPLICATION DATA

Voltage Tolerance:

AC Operation: 20.4 – 264V at 50/60 Hz
DC Operation: 10.2 – 137.5V

Load (Burden):

Maximum of 3 VA for all voltages

Setting Accuracy:

Maximum Setting (Adjustable): +5%, -0%
Minimum Setting (Adjustable): +0%, -50%

Repeat Accuracy (constant voltage and temperature):

±0.1% or ±50ms, whichever is greater

Reset Time:

Functions Triggered with Input Voltage: 0.1 Seconds
Functions Triggered with Control Switch: 0.04 Seconds

Start-up Time: (Time from when power is applied until unit is timing): 50ms

Maintain Function Time: (Time unit continues to operate after power is removed): 0.01 Seconds

Temperature:

Operating: -28° to 65°C (-18° to 150°F)
Storage: -40° to 85°C (-40° to 185°F)

Functions Triggered By A Control Switch:

Minimum required trigger switch closure time is 50ms.

Compatibility:

Using a solid state switch to initiate the time sequence is acceptable. See www.macromatic.com/leakage or contact Macromatic for information regarding leakage current limits and other solid state design considerations.

Output Contacts:

10A @ 240V AC/30V DC,
1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120/240V AC (N.C.)
B300 & R300 (N.O.); AC15 & DC13

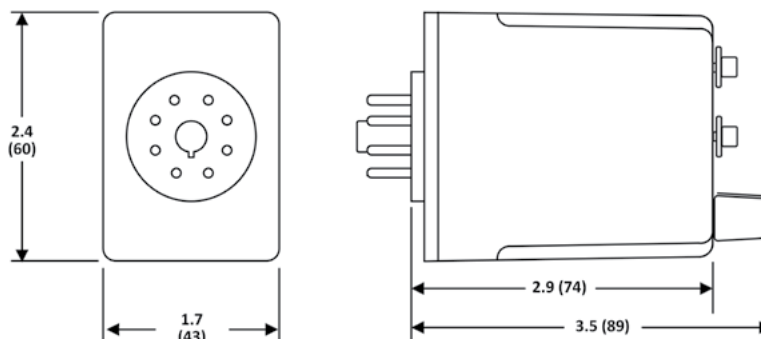
Life:

Mechanical: 10,000,000 operations
Full Load: 100,000 operations

Approvals:



DIMENSIONS



All Dimensions in Inches (Millimeters)

PROGRAMMABLE | MULTI-RANGE ON DELAY, INTERVAL ON & FLASHER

TR-6 SERIES TIME RANGER™

The TR-6 Series offers the flexible programmability of a multi-range time delay relay together with a universal input voltage. These products provide an easy method to select one of 16 time ranges between 0.05 seconds and 100 hours using a rotary switch. The actual time delay is then set by using the potentiometer to adjust within the selected time range.



- ◆ Each unit has 16 timing ranges built-in covering 0.05 seconds-100 hours
- ◆ Selecting a range is easy using a rotary switch (no math is required or DIP switches to set)
- ◆ Universal input voltage: 24-240V AC & 12-125V DC
- ◆ Uses industry-standard 8 pin octal sockets
- ◆ 10A DPDT output contacts can handle most pilot duty & fractional HP loads



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FUNCTION ■	INPUT VOLTAGE 50/60Hz.	CATALOG NUMBER	WIRING/ SOCKETS
ON DELAY A	24-240V AC & 12-125V DC	TR-6022U	<p>DIAGRAM 1</p>
INTERVAL ON B	24-240V AC & 12-125V DC	TR-6052U	
FLASHER (OFF 1st) E	24-240V AC & 12-125V DC	TR-6082U	
FLASHER (ON 1st) F	24-240V AC & 12-125V DC	TR-6092U	

■ See "Definitions of Timing Functions".

TIMING RANGES

Select one of the 16 built-in time ranges by setting the rotary switch per a chart on the unit (see below) and then adjust within that range using the knob on top.

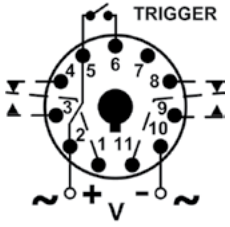
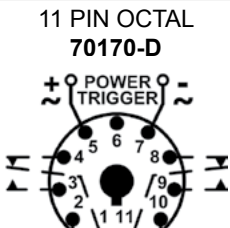
Dial Setting	Timing Range
A	0.05 - 0.5 Sec.
B	0.1 - 1 Sec.
C	0.5 - 5 Sec.
D	1 - 10 Sec.
E	3 - 30 Sec.
F	6 - 60 Sec.
G	0.2 - 2 Min.
H	0.5 - 5 Min.
I	1 - 10 Min.
J	3 - 30 Min.
K	6 - 60 Min.
L	0.2 - 2 Hr.
M	0.5 - 5 Hr.
N	1 - 10 Hr.
O	2.4 - 24 Hr.
P	10 - 100 Hr.

Sockets & Accessories available

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PROGRAMMABLE | MULTI-RANGE OFF DELAY, SINGLE SHOT & WATCHDOG TR-6 SERIES TIME RANGER™

The TR-6 Series offers the flexible programmability of a multi-range time delay relay together with a universal input voltage. These products provide an easy method to select one of 16 time ranges between 0.05 seconds and 100 hours using a rotary switch. The actual time delay is then set by using the potentiometer to adjust within the selected time range.

FUNCTION ■	INPUT VOLTAGE 50/60Hz.	CATALOG NUMBER	WIRING/SOCKETS
OFF DELAY ▲ Control Switch Trigger C	24-240V AC & 12-125V DC	TR-6162U	 <p>DIAGRAM 212</p>
SINGLE SHOT Control Switch Trigger D	24-240V AC & 12-125V DC	TR-6152U	
WATCHDOG Control Switch Trigger (Retriggerable Single Shot) J	24-240V AC & 12-125V DC	TR-6132U	
OFF DELAY ▲ Power Trigger C	24-240V AC & 12-125V DC	TR-6192U	 <p>DIAGRAM 216</p>
SINGLE SHOT Power Trigger D	24-240V AC & 12-125V DC	TR-6172U	
WATCHDOG Power Trigger (Retriggerable Single Shot) J	24-240V AC & 12-125V DC	TR-6182U	

■ See "Definitions of Timing Functions".

▲ See TR-606 Series for True Off Delay function.

TIMING RANGES

Select one of the 16 built-in time ranges by setting the rotary switch per a chart on the unit (see below) and then adjust within that range using the knob on top.

Dial Setting	Timing Range
A	0.05 - 0.5 Sec.
B	0.1 - 1 Sec.
C	0.5 - 5 Sec.
D	1 - 10 Sec.
E	3 - 30 Sec.
F	6 - 60 Sec.
G	0.2 - 2 Min.
H	0.5 - 5 Min.
I	1 - 10 Min.
J	3 - 30 Min.
K	6 - 60 Min.
L	0.2 - 2 Hr.
M	0.5 - 5 Hr.
N	1 - 10 Hr.
O	2.4 - 24 Hr.
P	10 - 100 Hr.

Sockets & Accessories available



- ◆ Each unit has 16 timing ranges built-in covering 0.05 seconds-100 hours
- ◆ Selecting a range is easy using a rotary switch (no math is required or DIP switches to set)
- ◆ Universal input voltage: 24-240V AC & 12-125V DC
- ◆ Uses industry-standard 11 pin octal sockets
- ◆ 10A DPDT output contacts can handle most pilot duty & fractional HP loads



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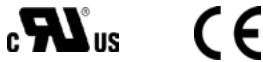
PROGRAMMABLE | MULTI-RANGE REPEAT CYCLE & DELAYED INTERVAL

TR-6 SERIES TIME RANGER™

The TR-6 Series offers the flexible programmability of a multi-range time delay relay together with a universal input voltage. These products provide an easy method to select one of 16 time ranges between 0.05 seconds and 100 hours using a rotary switch. The actual time delay is then set by using the potentiometer to adjust within the selected time range.



- ◆ Each unit has 16 timing ranges built-in covering 0.05 seconds-100 hours
- ◆ Selecting a range is easy using a rotary switch (no math is required or DIP switches to set)
- ◆ Independently selectable & adjustable ON & OFF times
- ◆ Universal input voltage: 24-240V AC & 12-125V DC
- ◆ Uses industry-standard 8 or 11 pin octal sockets
- ◆ 10A DPDT output contacts can handle most pilot duty & fractional HP loads



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FUNCTION ■	INPUT VOLTAGE 50/60Hz.	CATALOG NUMBER	WIRING/SOCKET
REPEAT CYCLE* (OFF Time First Followed By ON Time and Repeating) L	24-240V AC & 12-125V DC	TR-6312U	8 PIN OCTAL 70169-D
REPEAT CYCLE* (ON Time First Followed By OFF Time and Repeating) M	24-240V AC & 12-125V DC	TR-6512U	 DIAGRAM 1
DELAYED INTERVAL* (OFF Time Followed by ON Time Followed by OFF State Until Reset) N	24-240V AC & 12-125V DC	TR-6612U	
DELAYED INTERVAL* Control Switch Trigger (OFF Time Followed by ON Time Followed by OFF State Until Reset) P	24-240V AC & 12-125V DC	TR-6652U	11 PIN OCTAL 70170-D

* These units have independently selectable & adjustable ON & OFF times. See www.macromatic.com/onoff for more information.

■ See "Definitions of Timing Functions".

TIMING RANGES

Select one of the 16 built-in time ranges by setting the rotary switch per a chart on the unit (see below) and then adjust within that range using the knob on top.

Dial Setting	Timing Range
A	0.05 - 0.5 Sec.
B	0.1 - 1 Sec.
C	0.5 - 5 Sec.
D	1 - 10 Sec.
E	3 - 30 Sec.
F	6 - 60 Sec.
G	0.2 - 2 Min.
H	0.5 - 5 Min.
I	1 - 10 Min.
J	3 - 30 Min.
K	6 - 60 Min.
L	0.2 - 2 Hr.
M	0.5 - 5 Hr.
N	1 - 10 Hr.
O	2.4 - 24 Hr.
P	10 - 100 Hr.

Sockets & Accessories available

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PROGRAMMABLE | MULTI-RANGE

TR-6 SERIES TIME RANGER™

APPLICATION DATA

Voltage Tolerance:

AC Operation: 20.4 – 264V at 50/60 Hz
DC Operation: 10.2 – 137.5V

Load (Burden):

Maximum of 3 VA for all voltages

Setting Accuracy:

Maximum Setting (Adjustable): +5%, -0%
Minimum Setting (Adjustable): +0%, -50%

Repeat Accuracy (constant voltage and temperature):

±0.1% or ±50ms, whichever is greater

Reset Time:

Functions Triggered with Input Voltage: 0.1 Seconds
Functions Triggered with Control Switch: 0.04 Seconds

Start-up Time:

(Time from when power is applied until unit is timing)
0.05 Seconds

Maintain Function Time:

(Time unit continues to operate after power is removed)
0.01 Seconds

Temperature:

Operating: -28° to 65°C (-18° to 150°F)
Storage: -40° to 85°C (-40° to 185°F)

Triggering Off Delay, Single Shot or Watchdog Units:

Timing sequence must be initiated only after input voltage is applied to unit. Minimum required trigger switch closure time is 0.1 seconds.

Compatibility:

Using a solid state switch to initiate the time sequence is acceptable. See www.macromatic.com/leakage or contact Macromatic for information regarding leakage current limits and other solid state design considerations.

Output Contacts:

DPDT 10A @ 240V AC/30V DC,
1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120/240V AC (N.C.)
B300 & R300 (N.O.); AC15 & DC13

Life:

Mechanical: 10,000,000 operations
Full Load: 100,000 operations

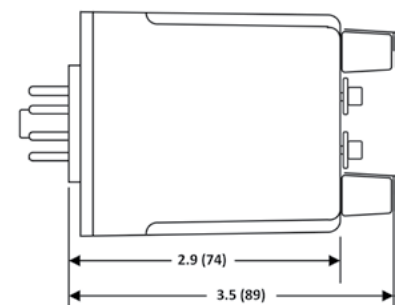
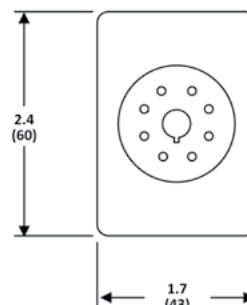
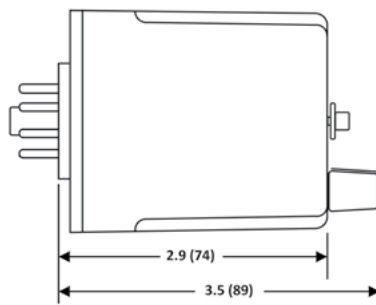
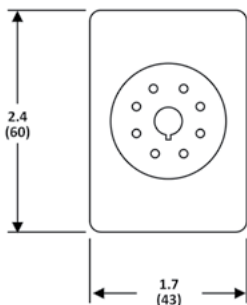
Approvals:

Low Voltage & EMC Directives
EN60947-1, EN60947-5-1

DIMENSIONS

TR-602, TR-605, TR608, TR609, TR-613, TR-615, TR-616,
TR-617, TR-618 & TR-619

TR-631-TR-651, TR-661 & TR-665



All Dimensions in
Inches (Millimeters)

PROGRAMMABLE | MULTI-RANGE TRUE OFF DELAY

TR-6 SERIES TIME RANGER™



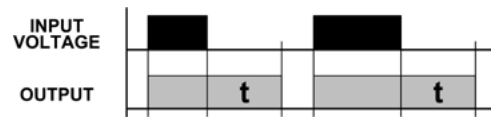
- ◆ Each unit has 8 timing built-in covering 0.05 seconds - 30 minutes
- ◆ Selecting a range is easy using a rotary switch (no math is required or DIP switches to set)
- ◆ Uses industry-standard 8 pin octal sockets
- ◆ 10A DPDT output contacts can handle most pilot duty & fractional HP loads



A True Off Delay time delay relay is designed to replace the functionality of pneumatic time delay relays which are very large, expensive and not very accurate. Unlike standard electronic Off Delay time delay relays (see page 29), a True Off Delay does not require a trigger switch or the continuous application of input voltage. Instead, these products keep the logic circuit and relay energized during the Off Delay (Delay on De-energization) period with an onboard power source.

The Macromatic TR-606 Series is a perfect product to use when a trigger switch is not available in the circuit or when the application is to replace the functionality of a pneumatic time delay relay. These products come with 8 separate timing ranges covering 0.5 seconds – 30 minutes which are easy to select & setup with one rotary switch & potentiometer.

Operation: Upon application of input voltage, the output is energized. When the input voltage is removed, the time delay (t) begins. At the end of the time delay (t), the output is de-energized.



Input voltage must be applied for a minimum of 0.5 seconds to assure proper operation. Any application of the input voltage during the time delay (t) will reset the time delay. No external trigger is required.

FUNCTION ■	INPUT VOLTAGE 50/60Hz.	CATALOG NUMBER	WIRING/SOCKETS
TRUE OFF DELAY	120V AC/DC 12V DC 24V AC/DC 240V AC 48V AC/DC	TR-60622 TR-60626 TR-60628 TR-60621 TR-60624	8 PIN OCTAL 70169-D DIAGRAM 1

■ See “Definitions of Timing Functions”.

TIMING RANGES

Select one of the 8 built-in time ranges by setting the rotary switch per a chart on the unit (see below) and adjust within that range using the knob on top:

Dial Setting	Timing Range
A	0.05 - 5 Sec.
B	0.1 - 10 Sec.
C	0.3 - 30 Sec.
D	0.6 - 60 Sec.
E	1.8 - 180 Sec.
F	3 - 300 Sec.
G	0.1 - 10 Min.
H	0.3 - 30 Min.

Sockets & Accessories available

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PROGRAMMABLE | MULTI-RANGE TRUE OFF DELAY

TR-6 SERIES TIME RANGER™

APPLICATION DATA

Voltage Tolerance:

AC Operation: +10/-15% of nominal at 50/60 Hz
DC Operation: +10/-15% of nominal

Load (Burden):

Maximum of 2 VA for all voltages. These products draw a brief inrush current on power-up of 1A to charge the internal circuitry.

Setting Accuracy:

Maximum Setting (Adjustable): +5%, -0%
Minimum Setting (Adjustable): +0%, -50%

Repeat Accuracy (constant voltage and temperature):
±50ms

Reset Time: 0.1 Seconds

Start-up Time:

(Time from when power is applied until unit is timing)
0.05 Seconds

Maintain Function Time:

(Time unit continues to operate after power is removed)
0.01 Seconds for all units

Temperature:

-28° to 65°C (-18° to 150°F)

Compatibility:

Using a solid state switch to initiate the time sequence is acceptable. See www.macromatic.com/leakage or contact Macromatic for information regarding leakage current limits and other solid state design considerations.

Output Contacts:

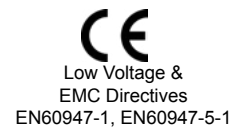
DPDT 10A @ 240V AC; 8A @ 28V DC,
1/2 HP @ 240V AC, 1/4HP @ 120V AC
B300 & R300

Life:

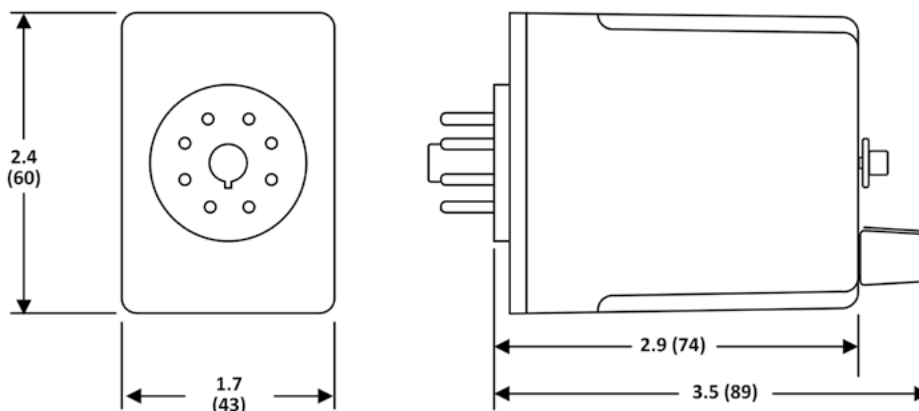
Mechanical: 2,000,000 operations
Full Load: 100,000 operations

IMPORTANT: These relays are shipped from the factory in the OFF state. A shock to the relay during shipping or installation may cause it to change to the ON state. It is recommended that input voltage be applied to the product for at least 0.1 second and removed to cycle the unit to the OFF state prior to use in the application. Please note that it will take as long as the OFF Delay setting to reset the unit once input voltage has been removed.

Approvals:



DIMENSIONS



All Dimensions in Inches (Millimeters)